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PREVENTION OF EXPERIMENTAL INTRANASAL INFECTION WITH CERTAIN NEUROTROPIC VIRUSES BY MEANS OF CHEMICALS INSTILLED INTO THE NOSTRILS [1]

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Various experimental procedures have been found to influence the local susceptibility of the skin of animals to certain virus infections. Ledingham (1), for instance, showed that the introduction of india ink into the skin rendered the area relatively resistant to infection with vaccine virus. Le Fevre (2), Rivers, Stevens, and Gates (3), and others, found that various types of irradiation likewise tended to render the skin more resistant to this virus. Armstrong (4) demonstrated that diphtheria toxin produced a similar effect in rabbits and showed that the effect was the result of the tissue response rather than of any direct influence of the toxin on the virus. The same worker (5), moreover, showed that the mucous membranes of the eyes of rabbits behaved as did the skin in this regard, a result which led to an inquiry to determine whether the membranes of the nose, a natural route of infection, could be smilarly experimentally influenced.

Many chemicals have been recommended for introduction into the nostrils of man as a treatment for abnormal conditions with a view to producing an anodyne, protective, astringent, antiseptic, absorbent, or solvent action.

Flexner and Amoss (1920) (6) attempted to sterilize the poliomyelitis-inoculated nasal membranes of monkeys by means of chloramin-T and dichloramin-T, but concluded that antiseptic chemicals are of doubtful value and may even be objectionable.

Poulton (1932) (7) advocated an oily preparation, Glegg's mixture, which he had employed as early as 1921 for both treatment and prevention of common colds. He attributed its influence to the oily coating rendering the mucous membranes a less favorable environment for infecting organisms and advised a controlled field test of its prophylactic value. Olitsky and Cox (1934) (8) reported that three doses of tannic acid (0.5 to 1.0 percent) daily for 3 days exerted a temporary protective action in mice, but not in guinea pigs, against the

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virus of equine encephalomyelitis. Armstrong (1935) (5) found that sodium aluminum sulphate (2 to 4 percent) instilled into the nostrils tended to protect mice against the virus of encephalitis (St. Louis type), and Armstrong and Harrison (1935) (9) demonstrated that, with 3 to 12 preliminary instillations of 4 percent sodium aluminum sulphate into the nostrils of 23 monkeys, 17 survived the intranasal instillation of poliomyelitis virus, while of 19 nonprepared controls identically inoculated but 3 survived.

These results, together with the fact that encephalitis and poliomyelitis are strikingly similar as to epidemiology, pathology, and probable route of infection, led us to feel that agents which tend to prevent intranasal infection with one of these neurotropic viruses might also be effective against the other.

Encephalitis in white mice has therefore been utilized by Armstrong as a relatively convenient and inexpensive indicator by which various agents have been compared as to their relative efficiency in preventing intranasal infection. Those solutions found most effective in mice have then been utilized by the authors in an attempt to prevent intranasally-inoculated poliomyelitis of monkeys.

EXPERIMENTAL METHOD (ENCEPHALITIS IN MICE)

Strength of solutions.—It was found necessary to make a preliminary titration of each chemical for its irritative properties, and to select a concentration which was relatively noninjurious when introduced into the nostrils of mice. When a concentration too irritating was employed, variable numbers of mice promptly developed difficulty in breathing, which often resulted in death. This result was thought to be due to a swelling of the membranes blocking the nares to the passage of air. This fact and, in certain instances, the relative insolubility of the chemicals in water, rendered it impracticable to employ a uniform concentration of the various agents tested.

Handling of mice.—Three to six chemicals were usually compared in one test, each solution being applied to from 25 to 40 mice. The mice for each experiment were selected at random from the same shipments, equal numbers being placed in similar cages and identically fed and cared for throughout the trial.

The mice of each cage received from three to seven intranasal instillations of the selected chemical, in the predetermined concentration, at intervals of 2 to 7 days. The mice were lightly etherized and 0.04 cc of the solution was dropped into the nostrils from a 22-gage needle attached to a 0.25-cc syringe, the mouse being held ventral side upward, with the head slightly lower than the body. The virus inoculations were made in the same manner.

Virus for making the infective inoculations was prepared by grinding three glycerinated brains taken from mice near death from encephalitis and diluting with saline to a 1:450 suspension. Then 0.03 of a cubic centimeter of this freshly prepared suspension was administered into the nostrils of each mouse from 3 to 5 days following the last chemical instillation.

In order to compensate for the possible loss in potency of the virus during administration, mice were taken one from each cage, in rotation, until all were inoculated, the same syringe being employed for all. Mice were observed for 15 days thereafter and deaths recorded.

CHEMICALS TESTED ON MICE

The following agents have been compared by this procedure: Cobra venom, sodium chloride, distilled water, alum, formalin, glucose, ferric chloride, aluminum sulphate, manganese chloride, zinc chloride, aluminum chloride, picric acid, tannic acid, lead acetate, sea water, thymol, tribrom-phenol, picramic acid, dinitrocresol, dinitrophenol, and quinine hydrochloride, in one or more concentrations and either alone or combined in certain instances (table 1).

TABLE 1.—*Effect of intranasal chemicals on intranasally inoculated encephalitis of mice*

Chemicals intranasally instilled	Concentration	Number of applications	Number of mice given treatment	Number of mice surviving			Percentage surviving	Average duration life (up to 14 days)	Protection index = average days life after virus ÷ percent dying
				To virus	4 days after virus	14 days after virus			
June 12, 1934									
Cobra venom	1:5800	3	30	22	22	2	9.1	8.1	0.089
	Percent								
Sodium chloride	5	3	25	18	17	4	23.5	9.4	.123
Distilled water	100	3	25	21	21	5	23.8	7.9	.103
Controls			20	18	18	4	22.2	9.3	.119
July 18, 1934									
Alum Formalin	4 .2	7	30	19	19	15	79.0	10.0	.477
Sodium chloride Formalin	4 .2	7	30	21	20	12	60.0	8.6	.215
Alum Formalin plus killed virus	4 .2	7	30	19	16	14	87.5	9.5	.76
Sodium chloride Formalin plus killed virus	4 .2	7	30	11	10	6	60.0	8.5	.236
Glucose	15	7	30	27	25	12	48.0	9.1	.175
Controls			30	21	21	8	38.0	8.0	.129
July 31, 1934									
Alum	3	7	45	38	35	29	83.0	10.0	.589
Sodium chloride	4	7	45	33	31	20	64.0	9.1	.252
Glucose	15	7	45	27	25	12	48.0	9.1	.175
Controls			45	42	42	16	38.0	8.0	.129
Nov. 16, 1934									
Alum	3	3	30	29	29	21	72.4	8.8	.319
Do	1.5	3	30	29	29	17	58.6	8.4	.202
Do	.75	3	30	29	29	13	44.9	8.1	.147
Alum Glucose	2 7	3	30	24	24	12	50.0	8.2	.164
Controls			30	28	28	18	64.3	8.7	.244

TABLE 1.—*Effect of intranasal chemicals on intranasally inoculated encephalitis of mice*—Continued

Chemicals intranasally instilled	Concentration	Number of applications	Number of mice given treatment	Number of mice surviving			Percentage surviving	Average duration life (up to 14 days)	Protection index—average days life after virus+percent dying
				To virus	4 days after virus	14 days after virus			
Apr. 24, 1935									
Alum plus NaOH to near precipitation	4	4	25	17	15	5	33.3	7.7	.115
Alum, acidulated H_2SO_4	4	4	25	18	13	2	15.4	9.2	.108
Alum plus NaOH plus ¼ vol. adrenalin 1:1,000	4	4	25	8	3	0	0	-------	0
Alum, acidulated H_2SO_4 plus ¼ vol. adrenalin 1:1,000	4	4	25	11	8	5	62.5	7.3	.194
Controls	-------	0	25	18	16	2	12.5	7.3	.083
June 15, 1935									
Ferric chloride	.16	3	25	16	16	11	68.6	9.2	.292
Aluminum sulphate	.24	3	25	14	10	1	10.0	9.4	.104
Manganese chloride	.57	3	25	8	8	6	75.0	9.5	.38
Zinc chloride	.18	3	25	21	20	13	65.0	8.3	.237
Aluminum chloride	.43	3	25	17	14	2	14.3	7.4	.086
ontrols	-------	3	25	18	15	6	40.0	8.6	.143
Jan. 18, 1935									
Tannic acid	1	3	30	14	14	9	64.2	8.6	.24
Alum	3	3	30	20	19	10	52.6	9.8	.207
Lead acetate	1	3	30	16	16	8	50.0	8.0	.160
Picric acid	.64	3	30	27	26	22	84.6	8.2	.533
Feb. 20, 1935									
Alum	3	3	30	23	22	18	81.8	7.2	.394
Picric acid	Sat. Sol.	3	30	28	28	25	89.3	7.6	.709
Tannic acid	1	3	30	14	13	6	46.1	8.0	.148
Controls	-------	3	30	26	25	13	52.0	8.3	.173
Aug. 5, 1935									
Picric acid	.64	4	31	28	28	17	60.7	8.4	.213
Do	.32	4	31	27	27	16	59.3	8.2	.206
Alum	2								
Picric acid	.32	4	31	28	28	14	50.0	8.6	.172
Zinc chloride	.09								
Picric acid	.32	4	31	30	30	15	50.0	7.7	.154
Manganese chloride	.16								
Picric acid	.32	4	31	30	30	15	50.0	7.7	.154
Ferric chloride	.05								
Controls	-------	-------	31	30	30	10	33.3	7.7	.115
Sept. 20, 1935									
Sea water	100	5	30	25	25	6	24.0	7.9	.104
Picric acid	.64	5	30	23	23	12	52.2	8.5	.178
Thymol	Sat. sol.	5	30	29	28	12	42.9	7.8	.136
Tribromphenol	±3	5	30	27	27	8	29.6	8.2	.116
Picramic acid	.5	5	30	21	21	4	19.1	8.2	.101
Controls	-------	-------	30	22	18	2	11.1	7.9	.089
Nov. 6, 1935									
3-5 dinitro-o-cresol	.5	5	30	28	27	8	29.6	7.4	.102
2-4-6 tribromphenol	.5	5	30	28	27	11	40.7	7.7	.129
2-4 dinitrophenol	.5	5	30	27	25	6	24.0	7.6	.1
Picric acid	.64	5	30	28	26	13	50.0	7.2	.144
Alum	3	5	30	23	22	8	36.3	7.8	.106
Controls	-------	-------	30	28	27	3	11.1	7.6	.086
Nov. 21, 1935									
Picric acid in H_2O	.32	4	40	33	32	7	21.9	7.8	.099
Picric acid in saline	.32	4	40	39	35	13	37.1	7.6	.121
Controls	-------	-------	40	37	36	2	5.5	6.5	.069
Dec. 30, 1935									
Quinine hydrochloride	1.5	5	40	31	28	6	21.4	7.9	.103
Picric acid	.32	5	40	32	30	9	30.0	8.0	.114
Controls	-------	-------	40	37	35	5	14.2	7.3	.085

RESULTS IN MICE

The protective value of a chemical against experimental intranasal infections may be evidenced by delayed deaths as well as by the proportion of mice surviving. Consequently these factors have been combined to form a prophylactic index, arrived at by dividing the average length of life, up to 14 days, following the virus inoculation by the percentage of mice dying. Deaths occurring during the 4 days immediately following the virus application have been found not to be due to the virus inoculated, hence, are eliminated from the compilation. These early deaths, together with those dying prior to the virus application do, however, give an idea of the comparative toxic or irritative effect of the various chemicals and should be considered in determining the practicability of any experimental solution.

By the above methods it is possible to select the relatively most harmless and effective chemical from each test and to select solutions to be compared in further tests as desired. By reference to table 1 it may be seen that picric acid stands out as one of the least irritating or least toxic agents as well as the most effective experimental prophylactic agent tried, being superior in both these regards to sodium aluminum sulphate. It was therefore utilized in an attempt to prevent intranasally inoculated poliomyelitis of monkeys.

EXPERIMENTAL METHOD (POLIOMYELITIS OF MONKEYS)

Fresh monkeys were given identical care and treatment except that the test animals received three to six instillations of varying concentrations of picric acid, alone or combined with alum, into the nostrils, prior to the virus inoculations, by means of a tuberculin syringe from which the needle had been removed. The controls received no treatment whatever, as it had been determined in a previous test that saline instillations exerted no effect. Picric acid and alum in the same solution were employed in some instances because it was deemed possible that these agents might produce their protective effect in different ways, and thus supplement each other in their effects.

Virus for each test was prepared by grinding portions of cords from several monkeys recently dead of poliomyelitis and diluting to 4 percent suspension with 0.85 percent saline. Centrifugation was carried out at slow speed to remove gross particles and the supernatant fluid used for intranasal inoculation. Three inoculations of 1 cc were administered into each nostril at intervals of 24 hours. Temperatures were taken daily. Animals which developed poliomyelitis were allowed to go until complete paralysis developed, when they were etherized, autopsy was performed, and the tissues were submitted for pathological confirmation as to the cause of death.

RESULTS IN MONKEYS (POLIOMYELITIS VIRUS)

In order to determine whether picric acid would protect monkeys against intranasally inoculated poliomyelitis virus, as it did mice against encephalitis virus, a rapid test was carried out (table 2, experiment 1). Four monkeys were given 1.5 cc of 0.64 percent picric acid in water up each nostril on July 6, 8, and 9 (1935); on July 11, 12, and 13 these monkeys and four controls each received intranasally 1 cc of the supernatant fluid from a centrifuged 4 percent suspension of mixed poliomyelitis virus. Three of the four prepared animals survived while all four controls died of poliomyelitis.

In view of these encouraging results a comparative test of the efficacy of picric acid, picric acid plus alum, and our most effective previous agent, alum, was undertaken (table 2, experiment 2). Groups of 4 monkeys were intranasally inoculated (both nostrils) with 1.5 cc of 0.64 percent picric acid, a solution of 2 percent alum in 0.32 percent picric acid, and 4 percent alum, respectively, on August 28, August 30, September 6, 10, 12, and 14 (1935). On September 18, 19, and 20 each group of monkeys, together with the nonprepared controls, were given 1 cc of supernatant fluid from a centrifuged 4 percent suspension of mixed poliomyelitis virus into each nostril. The four picric acid and the four picric acid-alum prepared animals survived, while two of the alum prepared animals and the four controls died of poliomyelitis.

These results indicate that, in the concentrations employed, picric acid either alone or in combination with alum is superior to alum alone. Furthermore, it appears that the protective effect is cumulative, since three instillations of picric acid (table 2, experiment 1) protected but three or four animals while six instillations (table 2, experiment 2) protected all of four monkeys.

The number of monkeys is small; however, the results are strictly in accord with findings in the mouse-encephalitis studies and they tend to increase confidence in the latter as a cheap and convenient indicator in the selection of chemicals for trial in the monkey-poliomyelitis tests.

In order to determine whether weaker solutions would prove effective, groups of four monkeys each were given intranasal instillations, respectively, of 1.5 cc of 0.32 percent picric acid, 0.16 percent picric acid, and solutions containing 0.16 percent picric acid with 0.5 percent alum and 0.08 percent picric acid with 0.25 percent alum, on October 29, 31, and November 2, 4, 6, and 8 (1935), (table 2, experiment 3). On November 12, 13, and 14 these animals and 4 controls were each given 1 cc of 4 percent poliomyelitis virus prepared as in experiments 2 and 3.

Two animals died of colitis prior to receiving the virus, but the condition was not related to the nasal instillations, as several unused

TABLE 2.—*Preventive effect of chemicals in monkeys*

Monkey no.	Intranasal preparation and inoculation									Day of complete paralysis following first intranasal virus inoculation		Onset of fever by days following first virus inoculation		Clinical and pathological diagnosis
				7-6-35	7-8-35	7-9-35	7-11-35	7-12-35	7-13-35	Prepared	Controls	Prepared	Controls	
Experiment 1:														
965	—	—	—	0.64 P	0.64 P	0.64 P	V	V	V	10		6		Poliomyelitis.
967	—	—	—	0.64 P	0.64 P	0.64 P	V	V	V	S				
963	—	—	—	0.64 P	0.64 P	0.64 P	V	V	V	S				
968	—	—	—	0.64 P	0.64 P	0.64 P	V	V	V	S				
964	—	—	—	—	—	—	V	V	V		21		7	Do.
966	—	—	—	—	—	—	V	V	V		15		8	Do.
969	—	—	—	—	—	—	V	V	V		9		4	Do.
970	—	—	—	—	—	—	V	V	V		9		5	Do.
	8-28-35	8-30-35	9-6-35	9-10-35	9-12-35	9-14-35	9-18-35	9-19-35	9-20 35					
Experiment 2:														
1009	0.64 P	0.64 P	0.64 P	0.64 P	0.64 P	0.64 P	V	V	V	S				
1010	0.64 P	0.64 P	0.64 P	0.64 P	0.64 P	0.64 P	V	V	V	S				
1011	0.64 P	0.64 P	0.64 P	0.64 P	0.64 P	0.64 P	V	V	V	S				
1012	0.64 P	0.64 P	0.64 P	0.64 P	0.64 P	0.64 P	V	V	V	S				
1005	P A	P A	P A	P A	P A	P A	V	V	V	S				
1006	P A	P A	P A	P A	P A	P A	V	V	V	S				
1007	P A	P A	P A	P A	P A	P A	V	V	V	S				
1008	P A	P A	P A	P A	P A	P A	V	V	V	S				
1001	4. A	4. A	4. A	4. A	4. A	4. A	V	V	V	S				
1002	4. A	4. A	4. A	4. A	4. A	4. A	V	V	V	9		5		Do.
1003	4. A	4. A	4. A	4. A	4. A	4. A	V	V	V	9		6		Do.
1004	4. A	4. A	4. A	4. A	4. A	4. A	V	V	V	S				
996	—	—	—	—	—	—	V	V	V		9		5	Do.
997	—	—	—	—	—	—	V	V	V		9		5	Do.
998	—	—	—	—	—	—	V	V	V		10		6	Do.
999	—	—	—	—	—	—	V	V	V		10		6	Do.

TABLE 2.—*Preventive effect of chemicals in monkeys*—Continued

Monkey no.	Intranasal preparation and inoculation									Day of complete paralysis following first intranasal virus inoculation		Onset of fever by days following first virus inoculation		Clinical and pathological diagnosis
	10-29-35	10-31-35	11-2-35	11-4-35	11-6-35	11-8-35	11-12-35	11-13-35	11-14-35	Prepared	Controls	Prepared	Controls	
Experiment 3:														
72	0.32 P	0.32 P	0.32 P	0.32 P	0.32 P	0.32 P	V	V	V	S				
73	0.32 P	0.32 P	0.32 P	0.32 P	0.32 P	0.32 P	V	V	V	13		8		Poliomyelitis.
74	0.32 P	0.32 P	0.32 P	0.32 P	0.32 P	Died	—	—	—	—				Acute colitis.
75	0.32 P	0.32 P	0.32 P	0.32 P	0.32 P	0.32 P	V	V	V	S				
80	0.16 P	0.16 P	0.16 P	0.16 P	0.16 P	0.16 P	Died	—	—	—				Do.
81	0.16 P	0.16 P	0.16 P	0.16 P	0.16 P	0.16 P	V	V	V	S				
82	0.16 P	0.16 P	0.16 P	0.16 P	0.16 P	0.16 P	V	V	V	S				
83	0.16 P	0.16 P	0.16 P	0.16 P	0.16 P	0.16 P	V	V	V	S				
76	P A′	P A′	P A′	P A′	P A′	P A′	V	V	V	S				
77	P A′	P A′	P A′	P A′	P A′	P A′	V	V	V	S				
88	P A′	P A′	P A′	P A′	P A′	P A′	V	V	V	S				
79	P A′	P A′	P A′	P A′	P A′	P A′	V	V	V	S				
84	P′ A	P′ A	P′ A	P′ A	P′ A	P′ A	V	V	V	*9		4		Poliomyelitis.
85	P′ A	P′ A	P′ A	P′ A	P′ A	P′ A	V	V	V	*8		13		Poliomyelitis (paralysis legs).
86	P′ A	P′ A	P′ A	P′ A	P′ A	P′ A	V	V	V	*10		3		Poliomyelitis.
87	P′ A	P′ A	P′ A	P′ A	P′ A	P′ A	V	V	V	*7		3		Do.
88	—	—	—	—	—	—	V	V	V		7		4	Do.
89	—	—	—	—	—	—	V	V	V		8			No symptoms.
90	—	—	—	—	—	—	V	V	V		7		3	Poliomyelitis.
91	—	—	—	—	—	—	V	V	V		10		3	Do.

0.64 P=0.64 percent picric acid in distilled water, 1.5 cc each nostril.
P A=Mixture of 2 percent sodium aluminum sulphate in 0.32 percent picric acid, 1.5 cc each nostril.
4 A=4 percent sodium aluminum sulphate, 1.5 cc each nostril.
0.32 P=0.32 percent picric acid.
0.16 P=0.16 percent picric acid.
P A′=Mixture of 0.5 percent sodium aluminum sulphate in 0.16 percent picric acid, 1.5 cc each nostril.
P′ A=Mixture of 0.25 percent sodium aluminum sulphate in 0.08 percent picric acid, 1.5 cc each nostril.
—=Controls, no preparation.
S=Survived.
V=Mixed poliomyelitis virus, 1 cc 4 percent suspension each nostril.
*=Excluded from following compilations owing to too great dilution of chemicals.

monkeys from this shipment died of the ailment. Three animals received 0.32 percent picric acid, of which two survived the virus instillations and one died of poliomyelitis; three received 0.16 percent picric acid and all survived; four received 0.16 percent picric acid in 0.5 percent alum solution, and all survived; while of four monkeys getting 0.08 percent picric acid in 0.25 percent alum, three died of poliomyelitis and one recovered, following symptoms, with paralysis of the right front leg. Four nonprepared controls were similarly inoculated with virus, of which three died and one survived without symptoms.

It is thus apparent that picric acid in dilutions as low as 0.16 percent exerted a definite protective effect, while 0.08 percent in 0.25 percent alum solution afforded no protection. Excluding this latter group as inadequately prepared, it is found that the survivals among the variously prepared groups were as follows:

TABLE 3.—*Summary of results (monkeys and poliomyelitis)*

Preparation	Monkeys treated				Controls			
	Total number of monkeys inoculated	Monkeys surviving poliomyelitis inoculations			Number inoculated	Monkeys surviving poliomyelitis inoculations		
		Number	Percent			Number	Percent	
Picric acid	14	12	86	91	12	1	8.3	10
Picric acid plus alum	8	8	100		8	1	12.5	
Alum	4	2	50	70	4	0	0	13
Alum (previously reported(9))	23	17	74		19	3	15.8	

As here employed it thus appears that picric acid alone or combined with alum is superior to alum alone in preventing intranasally inoculated poliomyelitis of monkeys and encephalitis of mice (tables 1, 2, 3). The solutions utilized in these tests were made with distilled water, but subsequent tests (table 1) indicate that solutions made with 85 percent saline are possibly more effective as well as being probably less irritating, and will therefore be used in future trials.

EFFECT OF PICRIC ACID ON THE MUCOUS MEMBRANES

The nasal membranes from 3 monkeys treated with 5 to 6 instillations of 0.64 percent picric acid and from 1 treated with 5 instillations of 0.32 percent picric acid in distilled water have been studied microscopically by Surg. R. D. Lillie, along with the membranes from 10 nontreated animals. It was not possible to distinguish the membranes from the two groups. In order that more visible membranes might be studied, 0.64 percent picric acid was repeatedly instilled

into the left eye of 4 monkeys on alternate days for 4 to 12 doses, but no apparent evidence of irritation was observed and 2 of the treated eyes were examined histopathologically and found normal.

The left eyes of two additional monkeys were instilled with 0.64 percent picric acid in saline every other day for a month without evidence of inflammation.

The authors have taken 16 instillations of 0.32 percent picric acid in 0.85 percent saline, sprayed from an atomizer, into their own nostrils at intervals of 1 to 6 days. The treatments were largely devoid of temporary tingling, stinging, and increased secretions occasioned by 1 percent alum solution (9). In fact the picric solution occasioned but slightly more local discomfort than did 0.85 percent saline alone; neither was any cumulative influence noted. There was, however, a bitter taste apparent from the pharynx which lasted for some minutes following the nasal spray, but was not especially disagreeable. No impairment of smell was noted. The yellowish color of the solution left no skin stain provided it was wiped away before drying occurred.

IMMUNITY

Mice which survive the intranasal instillation of encephalitis virus either with or without preliminary intranasal preparation, are, after a lapse of from 2 to 3 weeks, found to be from 30 to 80 percent immune to death following an intracerebral inoculation which is fatal to 100 percent of control mice, while a partial immunity, evidenced by delayed symptoms and death, is present in many of the prepared mice which die. Surviving monkeys have not been tested by reinoculation.

ACTION OF PICRIC ACID

Picric acid, as here employed, apparently produced no general ill effects in mice or monkeys; neither did it produce changes detectable by ordinary pathological methods in the nasal mucous membranes of the latter. That it exerts its protection through a local action is, however, indicated by the fact that picric acid intranasally administered to mice apparently affords no protection against intracerebrally inoculated virus. This local action may consist in some alteration in the nasal membranes which render them less permeable to the virus, although it is conceivable that the drug, either free or united with the cells of these structures, may exert a direct effect upon the virus itself.

INFLUENCE OF TIME OF TREATMENT IN RELATION TO VIRUS ADMINISTRATION (MICE)

It is conceivable that certain time relationships might occur which would tend to render the portal of entry for the virus increasingly, rather than less permeable to infection. In order to test this possi-

bility, five groups of mice were given, respectively, one intranasal instillation of 0.32 percent picric acid on the day of exposure to the virus, 1 and 2 days before, and 1 and 2 days after exposure. One control group received no picric acid. The results shown in table 4 indicate that the picric-acid treatment tended, under conditions of the experiment, always to reduce susceptibility of the mice groups. The protection afforded was greatest, however, when the chemical was administered prior to the virus instillations. Alum was found to act similarly (9).

TABLE 4.—*Effect of intranasal administration of 0.32 percent picric acid before, after, and on the same day as the virus administration (encephalitis)*

Number of mice receiving virus inoculations	Intranasal treatment (day of administration)					Deaths by dates											Survivals	Percent survivals
	12-17	12-18	12-19	12-20	12-21	12-22	12-23	12-24	12-25	12-26	12-27	12-28	12-29	12-30	12-31	1-1	1-2	
33	P	—	V	—	—	1	----	----	----	1	4	3	1	----	1	1	----	21	64
32	—	P	V	—	—	----	1	----	----	----	2	1	1	----	----	1	----	26	81
33	—	—	{V P}	—	—	----	----	----	----	2	4	3	3	----	----	----	----	21	64
33	—	—	V	P	—	----	----	----	----	3	6	3	2	----	----	----	1	18	55
33	—	—	V	—	P	----	1	----	----	2	3	4	1	2	----	----	----	20	61
33	—	—	V	—	—	----	1	----	----	9	3	5	1	1	----	----	----	13	39

P=0.32 percent picric acid solution (in saline).
V=Encephalitis virus (0.03 cc 1:430 suspension).
—=No treatment.

Influence of variation in frequency of application and of concentration of picric acid on the prevention of poliomyelitis in monkeys.—In order to determine the influence which the frequency of application of a given concentration of picric acid has upon the prevention of poliomyelitis in animals, a group of four monkeys was given four intranasal instillations of 0.32 percent solution of picric acid in saline, at intervals of 7 days. The animals then received three intranasal inoculations of poliomyelitis virus on the sixth, seventh, and eighth days following the last picric-acid application. One monkey of this group died of poliomyelitis and three survived without symptoms (table 5).

TABLE 5.—*Picric acid, 0.16 and 0.32 percent at 7- and 4-day intervals*

Monkey no.	Dec. 30, 1935	Date of picric acid instillations and strength of solution in parts per 100 (1936)							Date of administration of virus (1936)			Days first dose of virus to fever	Days first dose virus to complete paralysis	Diagnosis
		1-6	1-11	1-13	1-15	1-19	1-20	1-23	1-26	1-27	1-28			
104	0.32 P	0.32 P	------	0.32 P	------	------	0.32 P	------	V	V	V	------	S	
105	.32 P	.32 P	------	.32 P	------	------	.32 P	------	V	V	V	4	10	Poliomyelitis.
106	.32 P	.32 P	------	.32 P	------	------	.32 P	------	V	V	V	------	S	
107	.32 P	.32 P	------	.32 P	------	------	.32 P	------	V	V	V	------	S	
108	.16 P	.16 P	------	.16 P	------	------	.16 P	------	V	V	V	5	10	Do.
109	.16 P	.16 P	------	.16 P	------	------	.16 P	------	V	V	V	------	S	
110	.16 P	.16 P	------	.16 P	------	------	.16 P	------	V	V	V	------	S	
111	.16 P	.16 P	------	.16 P	------	------	.16 P	------	V	V	V	4	11	Do.
112	------	------	0.32 P	------	0.32 P	0.32 P	------	0.32 P	V	V	V	------	S	
113	------	------	.32 P	------	.32 P	.32 P	------	.32 P	V	V	V	------	S	
114	------	------	.32 P	------	.32 P	.32 P	------	.32 P	V	V	V	------	S	
115	------	------	.32 P	------	.32 P	.32 P	------	.32 P	V	V	V	------	S	
116	------	------	.16 P	------	.16 P	.16 P	------	.16 P	V	V	V	------	S	
117	------	------	.16 P	------	.16 P	.16 P	------	.16 P	V	V	V	5	11	Do.
118	------	------	.16 P	------	.16 P	.16 P	------	.16 P	V	V	V	4	9	Do.
119	------	------	.16 P	------	.16 P	.16 P	------	.16 P	V	V	V	------	S	
120	------	------	------	------	------	------	------	------	V	V	V	------	S	
121	------	------	------	------	------	------	------	------	V	V	V	------	S	Symptoms.
122	------	------	------	------	------	------	------	------	V	V	V	4	9	Poliomyelitis.
123	------	------	------	------	------	------	------	------	V	V	V	4	10	Do.

P=Picric acid.
S=Survived.

A second group of four monkeys was similarly handled, except that the picric acid was administered at intervals of 4 days, the last application being followed on the third, fourth, and fifth days by an intranasal instillation of virus. All survived without symptoms.

A third and fourth group were respectively identically handled as were groups 1 and 2, except that the concentration of picric acid was 0.16 rather than 0.32 percent. Two monkeys from each group died of poliomyelitis and the others survived without symptoms.

From the fifth group of four nonprepared control monkeys there were two deaths of poliomyelitis, while a third developed high fever and tremors but recovered, and one survived without symptoms.

All groups of the series were inoculated on the same day and with virus from the same 4 percent centrifuged suspension of several cords, the dose being 1 cc into each nostril repeated on 3 successive days.

It thus appears (table 5) that 0.16 percent picric acid was not sufficiently concentrated to be effective at 4- and 7-day intervals, while 0.32 percent was effective at 4-day intervals, but failed in one monkey treated at 7-day intervals. In this connection, it is to be remembered that no picric acid was administered subsequent to the virus applications. Such a continuation of the chemical applications, at the selected intervals, following the virus exposures would better have simulated any application of the method to the prevention of natural infection

through the periodic instillation of picric acid during a seasonal outbreak, and would possibly, judging from table 4, have improved the results.

SUMMARY

1. The instillation of various chemicals into the nostrils tends to prevent internasal infection of mice with encephalitis virus (St. Louis type) and of monkeys with poliomyelitis virus.

2. Picric acid, 0.32 to 0.64 percent either alone or combined with alum, was found to be superior to 4 percent alum and to be the most satisfactory and efficient experimental agent so far tried by the writers.

3. Picric acid in the concentration and amounts employed was devoid of detectable general or local injurious effects on animals. Sixteen applications sprayed by means of an atomizer into the nostrils of the authors produced no detectable injurious effects.

4. It is believed that picric acid exerts its protective effects locally, either by rendering the mucous membranes less permeable to infection or possibly by a direct action on the virus itself, or both.

5. The use of picric acid does not prevent the development of specific immunity in mice following a subsequent intranasal instillation of encephalitis virus.

6. Picric acid given to mice 1 and 2 days before, 1 and 2 days after, or on the same day as the virus instillation, led to a decreased susceptibility to the virus in all instances, as compared with nonprepared controls.

7. The protective effect of 0.32 percent picric acid is apparent against intranasally inoculated poliomyelitis for at least 4 to 7 days following its last administration.

8. Intranasally instilled chemicals effective in preventing encephalitis in mice have been found effective against poliomyelitis in monkeys, suggesting that the former may be utilized as an indicator in a further search for more effective prophylactic agents in the latter ailment.

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DEATHS DURING WEEK ENDED FEB. 8, 1936

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Feb. 8, 1936	Corresponding week, 1935
Data from 86 large cities of the United States:		
Total deaths	9,589	9,424
Deaths per 1,000 population, annual basis	13.4	13.1
Deaths under 1 year of age	564	647
Deaths under 1 year of age per 1,000 estimated live births	51	59
Deaths per 1,000 population, annual basis, first 6 weeks of year	13.4	13.1
Data from industrial insurance companies:		
Policies in force	67,857,697	67,235,778
Number of death claims	14,405	13,845
Death claims per 1,000 policies in force, annual rate	11.1	10.7
Death claims per 1,000 policies, first 6 weeks of year, annual rate	10.6	11.0

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended Feb. 15, 1936, and Feb. 16, 1935

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Feb. 15, 1936, and Feb. 16, 1935

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935
New England States:								
Maine	1	1	5	9	324	349	0	0
New Hampshire	----	----	15	----	30	16	0	0
Vermont	----	----	----	----	271	3	0	0
Massachusetts	9	11	----	----	706	549	6	0
Rhode Island	1	1	----	2	58	17	0	0
Connecticut	----	1	12	21	122	620	0	0
Middle Atlantic States:								
New York	37	42	[1] 69	[1] 24	1,807	1,391	20	3
New Jersey	10	11	17	17	70	407	5	3
Pennsylvania	48	52	----	----	640	3,004	9	4
East North Central States:								
Ohio	53	95	95	255	216	912	11	13
Indiana	36	35	45	113	9	562	3	5
Illinois	51	60	39	67	19	2,509	9	9
Michigan	4	9	8	31	27	895	1	4
Wisconsin	1	3	44	120	43	1,458	1	3
West North Central States:								
Minnesota	2	2	1	45	195	1,884	8	1
Iowa	7	10	4	87	14	1,462	12	3
Missouri	31	43	308	703	16	745	10	12
North Dakota	1	3	2	23	4	133	0	0
South Dakota	1	----	----	----	3	41	1	0
Nebraska	2	11	----	----	6	301	5	5
Kansas	15	----	47	40	15	1,300	0	6
South Atlantic States:								
Delaware	----	1	----	1	71	1	0	0
Maryland [2]	11	8	21	113	214	54	7	2
District of Columbia	18	9	3	1	21	7	4	3
Virginia	17	20	----	----	95	913	15	5
West Virginia	17	24	88	401	8	437	2	3
North Carolina	12	23	234	210	23	653	2	2
South Carolina	2	5	1,538	797	13	54	10	0
Georgia [2]	11	10	649	481	----	----	3	0
Florida	4	20	18	92	3	48	0	0

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Feb. 15, 1936, and Feb. 16, 1935—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935
East South Central States:								
Kentucky	15	14	62	99	68	679	13	2
Tennessee	9	16	245	515	15	67	16	14
Alabama	15	16	686	1,862	30	766	3	2
Mississippi [2 3]	3	8	----	----	----	----	2	3
West South Central States:								
Arkansas	9	3	57	80	2	22	2	2
Louisiana	25	41	48	24	40	94	3	0
Oklahoma [4]	8	13	207	437	3	84	17	5
Texas [3]	69	41	370	981	93	202	8	6
Mountain States:								
Montana	2	----	18	311	56	135	0	3
Idaho	----	2	6	----	14	68	1	0
Wyoming	----	----	----	----	3	16	2	0
Colorado	4	10	----	3	8	600	6	0
New Mexico	6	7	8	25	1	14	0	0
Arizona	----	----	151	81	22	17	3	0
Utah [2]	----	----	----	----	4	7	1	0
Pacific States:								
Washington	1	----	----	41	174	349	1	3
Oregon	----	2	67	173	767	102	2	0
California	28	56	3,890	306	1,529	530	10	8
Total	596	739	9,077	8,591	7,872	24,477	234	134
First 7 weeks of year	4,864	5,531	26,580	62,783	39,543	119,483	1,245	673

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935
New England States:								
Maine	0	0	14	29	0	0	0	0
New Hampshire	0	0	8	8	0	0	0	0
Vermont	0	0	31	11	0	0	0	0
Massachusetts	0	0	290	172	0	0	5	0
Rhode Island	0	0	19	15	0	0	0	0
Connecticut	0	0	67	65	0	0	0	0
Middle Atlantic States:								
New York	0	1	905	717	0	0	4	7
New Jersey	0	0	287	154	0	0	1	1
Pennsylvania	0	1	525	666	0	0	11	12
East North Central States:								
Ohio	1	3	473	1,225	1	1	2	5
Indiana	0	0	438	254	0	3	2	3
Illinois	1	2	668	948	14	1	3	11
Michigan	1	0	315	379	3	1	1	2
Wisconsin	0	1	454	627	25	18	1	2
West North Central States:								
Minnesota	0	1	361	97	4	0	1	0
Iowa	0	1	131	97	8	4	1	1
Missouri	1	0	186	155	4	2	12	2
North Dakota	0	0	74	68	1	0	0	1
South Dakota	0	0	54	9	12	3	0	1
Nebraska	0	0	184	41	20	78	1	0
Kansas	1	0	255	110	22	9	1	0
South Atlantic States:								
Delaware	0	0	6	14	0	0	1	0
Maryland [2]	0	0	90	85	0	0	1	1
District of Columbia	0	0	21	36	0	0	1	0
Virginia	0	3	43	74	0	0	6	13
West Virginia	0	0	35	155	0	0	2	5
North Carolina	0	0	30	42	1	0	7	1
South Carolina	0	0	4	3	0	0	0	0
Georgia [3]	0	0	25	19	0	0	0	3
Florida	0	1	6	13	0	0	0	1

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Feb. 15, 1936, and Feb. 16, 1935—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935	Week ended Feb. 15, 1936	Week ended Feb. 16, 1935
East South Central States:								
Kentucky	4	0	54	36	0	0	3	12
Tennessee	0	1	43	57	0	0	0	0
Alabama	1	1	19	14	0	0	1	4
Mississippi [2 3]	0	0	13	9	0	1	2	5
West South Central States:								
Arkansas	0	0	14	15	0	1	1	2
Louisiana	2	0	25	26	0	0	1	16
Oklahoma [4]	0	0	35	23	1	3	3	4
Texas [3]	0	0	105	74	1	111	5	29
Mountain States:								
Montana	0	0	84	9	8	1	0	0
Idaho	1	0	59	7	10	0	1	1
Wyoming	0	0	119	3	4	3	0	1
Colorado	0	2	143	239	20	8	0	0
New Mexico	0	0	91	19	0	2	3	3
Arizona	1	0	24	29	0	0	0	0
Utah [2]	0	0	85	82	0	0	0	0
Pacific States:								
Washington	1	1	89	52	17	37	0	4
Oregon	1	0	48	57	0	3	1	0
California	9	13	395	254	1	9	3	4
Total	25	32	7,444	7,293	177	299	88	157
First 7 weeks of year	162	198	50,141	45,206	1,599	1,492	806	1,037

[1] New York City only.
[2] Week ended earlier than Saturday.
[3] Typhus fever, week ended Feb. 15, 1936, 9 cases, as follows: Georgia, 2; Mississippi, 1; Texas, 6.
[4] Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
January 1936										
District of Columbia	19	154	14	----	24	----	0	96	0	12
Florida	6	46	21	48	6	1	0	58	0	5
Maine	1	6	50	----	921	----	5	75	0	1
Michigan	13	46	13	----	220	----	0	1,314	1	11
Nebraska	2	31	2	----	205	----	0	678	151	7
New Jersey	17	51	54	1	182	----	3	920	0	8
Ohio	42	152	232	1	543	1	2	1,641	10	13
Oregon	4	18	93	----	2,099	1	1	265	8	3
South Carolina	----	122	1,509	139	16	23	----	33	1	3
West Virginia	23	91	726	----	26	----	2	221	2	10

January 1936

Chicken pox:	Cases
District of Columbia	75
Florida	91
Maine	368
Michigan	2,507
Nebraska	199
New Jersey	1,773
Ohio	2,306
Oregon	242
South Carolina	72
West Virginia	350

Dengue:	Cases
Florida	1
South Carolina	2
Diarrhea:	
South Carolina	199
Ohio (under 2 years, enteritis included)	13
Dysentery:	
Florida (bacillary)	1
Michigan (amoebic)	1
New Jersey (amoebic)	1

Epidemic encephalitis:	Cases
District of Columbia	1
New Jersey	7
German measles:	
Maine	136
Michigan	47
New Jersey	80
Ohio	41
South Carolina	4
West Virginia	3

January 1936—Continued

	Cases
Hookworm disease: South Carolina	23
Impetigo contagiosa: Oregon	47
Lead poisoning:	
Michigan	4
Ohio	9
Mumps:	
Florida	76
Maine	1,405
Michigan	894
Nebraska	76
New Jersey	997
Ohio	1,117
Oregon	139
South Carolina	86
West Virginia	239
Ophthalmia neonatorum:	
New Jersey	1
Ohio	77
South Carolina	7
West Virginia	1
Paratyphoid fever: Michigan	1
Puerperal septicemia: Ohio	5
Rabies in animals:	
New Jersey	16
Oregon	15
South Carolina	39
Scabies: Oregon	43
Septic sore throat:	
Maine	4
Michigan	39
Ohio	122
Oregon	18
Tetanus:	
Michigan	1
Ohio	1
Trachoma:	
New Jersey	1
Ohio	6
Trichinosis:	
Michigan	1
New Jersey	3
Tularaemia:	
Ohio	10
South Carolina	1
Typhus fever:	
Florida	2
South Carolina	1
Undulant fever:	
Maine	1
Michigan	4
New Jersey	6
Ohio	4
Oregon	1
South Carolina	2
Vincent's infection:	
Maine	4
Michigan	21
Oregon	10
Whooping cough:	
District of Columbia	16
Florida	23
Maine	119
Michigan	1,406
Nebraska	34
New Jersey	480
Ohio	742
Oregon	36
South Carolina	70
West Virginia	52

CASES OF VENEREAL DISEASES REPORTED FOR DECEMBER 1935

These reports are published monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The figures are taken from reports received from State and city health officers. They are preliminary and are therefore subject to correction. It is hoped that the publication of these reports will stimulate more complete reporting of these diseases.

Reports from States

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Alabama [1]				
Arizona [1]				
Arkansas	145	0.77	117	0.62
California	1,406	2.28	1,270	2.06
Colorado [1]				
Connecticut	189	1.14	105	.63
Delaware	127	5.25	30	1.24
District of Columbia	93	1.87	109	2.19
Florida	279	1.77	75	.48
Georgia	692	2.38	224	.77
Idaho	0	0	0	0
Illinois	1,376	1.75	1,076	1.37
Indiana	128	.39	61	.18
Iowa [2]	90	.36	138	.56
Kansas	60	.31	40	.21
Kentucky	225	.85	229	.86
Louisiana [2]	307	1.42	77	.36
Maine	37	.46	41	.51
Maryland	849	5.08	210	1.26
Massachusetts	437	1.01	530	1.22
Michigan	494	.97	558	1.10
Minnesota	351	1.35	337	1.30
Mississippi	1,097	5.33	1,616	7.86
Missouri [1]				
Montana [2]	23	.43	37	.69
Nebraska	25	.18	48	.34
Nevada [3]				
New Hampshire	11	.23	3	.06
New Jersey	480	1.13	244	.58
New Mexico [2]	46	1.05	23	.53
New York [1]				
North Carolina	1,121	3.40	447	1.35
North Dakota	13	.19	49	.71
Ohio	458	.67	234	.34
Oklahoma [2]	127	.51	113	.46
Oregon	64	.65	120	1.21
Pennsylvania	239	.24	180	.18

See footnotes at end of table.

Reports from States—Continued

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Rhode Island	126	1.79	38	.54
South Carolina [2]	144	.82	193	1.10
South Dakota	13	.18	46	.57
Tennessee	866	3.24	355	1.33
Texas	89	.15	88	.14
Utah [3]				
Vermont	16	.44	27	.75
Virginia [2]	202	.83	154	.63
Washington	169	1.05	194	1.21
West Virginia	144	.81	108	.60
Wisconsin [4]	27	.09	91	.30
Wyoming [3]				
Total	12,785	1.22	9,629	0.92

Reports from cities of 200,000 population or over

Akron, Ohio	22	0.81	7	0.26
Atlanta, Ga	128	4.46	71	2.47
Baltimore, Md	581	7.04	110	1.33
Birmingham, Ala. [1]				
Boston, Mass	160	2.02	203	2.57
Buffalo, N. Y	177	2.99	98	1.66
Chicago, Ill	806	2.26	717	2.01
Cincinnati, Ohio	37	.79	39	.84
Cleveland, Ohio	182	1.96	73	.78
Columbus, Ohio	48	1.57	26	.85
Dallas, Tex. [1]				
Dayton, Ohio	13	.62	0	0
Denver, Colo	12	.40	3	.10
Detroit, Mich	179	1.03	215	1.24
Houston, Tex. [5]	126	3.76	33	.99
Indianapolis, Ind	18	.48	41	1.09
Jersey City, N. J	1	.03	1	.03
Kansas City, Mo	73	1.73	6	.14
Los Angeles, Calif	384	2.68	295	2.06
Louisville, Ky	284	8.77	162	5.00
Memphis, Tenn	194	7.27	56	2.10
Milwaukee, Wis	3	.05	17	.28
Minneapolis, Minn	87	1.79	90	1.85
Newark, N. J	144	3.11	95	2.05
New Orleans, La. [1]				
New York, N. Y. [1]				
Oakland, Calif	17	.56	34	1.12
Omaha, Nebr	8	.36	6	.27
Philadelphia, Pa	145	.73	53	.27
Pittsburgh, Pa	56	.82	40	.58
Portland, Oreg	42	1.34	76	2.42
Providence, R. I	56	2.16	23	.89
Rochester, N. Y	49	1.45	62	1.84
St. Louis, Mo	429	5.13	406	4.86
St. Paul, Minn	42	1.49	51	1.81
San Antonio, Tex. [1]				
San Francisco, Calif	215	3.21	122	1.82
Seattle, Wash	119	3.13	116	3.06
Syracuse, N. Y. [6]	15	.69	30	1.38
Toledo, Ohio	38	1.25	21	.69
Washington, D. C. [7]	93	1.87	109	2.19

[1] No report for current month.
[2] Incomplete.
[3] Not reporting.
[4] Only cases of syphilis in the infectious stage are reported.
[5] Reported by the Jefferson Davis Hospital; physicians are not compelled to report venereal diseases.
[6] Reported by the Syracuse Free Dispensary.
[7] Reported by Social Hygiene Clinic.

WEEKLY REPORTS FROM CITIES

City reports for week ended Feb. 8, 1936

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet-fever cases	Smallpox cases	Tuberculosis deaths	Typhoid-fever cases	Whooping-cough cases	Deaths, all causes
		Cases	Deaths								
Maine: Portland	0	------	0	0	4	1	0	0	0	5	19
New Hampshire:											
Concord	0	------	0	0	1	0	0	0	0	0	14
Manchester	0	------	0	0	2	1	0	0	0	0	14
Nashua	0	------	------	0	1	1	0	------	0	0	------
Vermont:											
Barre	0	------	0	0	0	0	0	2	0	0	5
Burlington	0	------	0	0	0	1	0	0	0	0	7
Rutland	0	------	1	9	0	8	0	0	0	0	10
Massachusetts:											
Boston	2	------	1	129	35	71	0	12	0	16	------
Fall River	1	------	1	0	5	7	0	2	0	2	40
Springfield	0	------	0	1	2	9	0	1	0	12	41
Worcester	0	------	0	0	7	21	0	1	0	1	51
Rhode Island:											
Pawtucket	0	------	0	0	0	1	0	0	0	0	------
Providence	1	------	1	12	6	9	0	2	0	3	75
Connecticut:											
Bridgeport	0	------	1	0	8	12	0	0	0	3	41
Hartford	0	------	1	1	4	5	0	4	0	5	49
New Haven	0	1	1	0	9	1	0	1	0	16	39
New York:											
Buffalo	0	------	1	25	17	56	0	8	0	9	145
New York	39	60	6	603	203	408	0	97	3	59	1,694
Rochester	0	------	0	0	3	5	0	3	0	1	67
Syracuse	0	------	1	59	6	10	0	1	0	12	42
New Jersey:											
Camden	1	1	0	1	1	6	0	0	0	0	32
Newark	0	5	1	1	13	85	0	5	0	12	111
Trenton	0	------	0	0	1	7	0	1	0	1	26
Pennsylvania:											
Philadelphia	7	5	4	237	44	89	0	26	1	52	530
Pittsburgh	8	5	3	22	37	59	0	7	0	21	208
Reading	0	------	0	1	1	2	0	1	0	0	27
Scranton	0	------	------	9	------	7	0	------	0	0	------
Ohio:											
Cincinnati	2	------	3	0	10	13	0	7	0	8	154
Cleveland	8	49	3	45	12	26	0	13	0	76	220
Columbus	0	4	4	1	9	19	0	2	0	1	112
Toledo	2	1	1	34	6	11	0	5	0	8	96
Indiana:											
Anderson	6	------	0	2	1	1	0	0	0	9	12
Fort Wayne	1	------	2	0	6	4	0	0	0	0	33
Indianapolis	1	------	1	1	20	28	0	4	0	25	121
Muncie	2	------	0	1	5	3	0	1	0	0	17
South Bend	0	------	0	1	4	1	0	0	0	1	23
Terre Haute	1	------	0	0	0	2	0	0	0	0	28
Illinois:											
Alton	1	------	0	0	0	0	0	0	0	0	10
Chicago	5	12	6	6	51	245	1	32	1	189	764
Elgin	0	------	0	0	1	4	0	0	0	0	14
Moline	0	------	0	0	2	12	0	0	0	0	9
Springfield	0	------	0	0	5	13	0	1	0	0	28
Michigan:											
Detroit	6	5	4	15	21	101	1	17	0	155	262
Flint	1	------	0	0	8	6	0	1	0	3	26
Grand Rapids	0	------	0	1	4	8	0	0	0	4	50
Wisconsin:											
Kenosha	0	------	0	0	0	6	0	0	0	3	8
Milwaukee	1	2	2	4	6	75	0	2	1	68	108
Racine	0	------	0	1	0	17	0	1	0	2	14
Superior	0	------	0	0	0	9	0	0	0	0	7
Minnesota:											
Duluth	0	------	1	1	0	4	0	0	0	1	23
Minneapolis	1	------	0	57	12	99	0	2	0	12	129
St. Paul	0	2	2	25	5	42	0	2	0	1	65

See footnotes at end of table.

City reports for week ended Feb. 8, 1936—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet-fever cases	Smallpox cases	Tuberculosis deaths	Typhoid-fever cases	Whooping-cough cases	Deaths, all causes
		Cases	Deaths								
Iowa:											
Cedar Rapids	0	------	-------	0	-------	1	0	-------	0	2	--------
Davenport	0	------	-------	0	-------	14	0	-------	0	0	--------
Des Moines	2	------	-------	0	-------	6	0	-------	0	1	31
Sioux City	0	------	-------	1	-------	6	5	-------	0	0	--------
Waterloo	1	------	-------	1	-------	0	0	-------	0	0	--------
Missouri:											
Kansas City	0	------	3	2	35	27	0	7	0	3	138
St. Joseph	0	------	1	0	3	4	0	1	0	0	21
St. Louis	11	------	1	1	23	41	0	11	0	1	251
North Dakota:											
Fargo	0	------	0	0	0	10	0	0	0	8	6
Grand Forks	0	------	-------	0	-------	0	0	-------	0	0	--------
Minot	0	------	0	0	0	18	0	0	0	0	13
South Dakota:											
Aberdeen	0	------	-------	0	-------	0	0	-------	0	0	--------
Sioux Falls	0	------	-------	0	0	18	1	0	0	0	9
Nebraska: Omaha	0	------	0	1	5	81	4	0	0	0	55
Kansas:											
Lawrence	0	------	1	1	2	0	0	0	0	0	15
Topeka	0	------	2	0	2	0	0	0	0	0	13
Wichita	0	3	2	0	8	18	0	0	0	2	36
Delaware: Wilmington	0	------	0	1	3	0	0	1	0	7	34
Maryland:											
Baltimore	3	4	3	14	37	32	0	17	1	26	251
Cumberland	0	1	1	0	1	1	0	0	0	0	8
Frederick	0	------	0	0	0	0	0	0	0	0	4
District of Columbia: Washington	12	2	0	7	30	30	0	15	0	5	219
Virginia:											
Lynchburg	0	------	0	2	5	2	0	0	0	3	20
Norfolk	0	2	0	0	3	4	0	1	0	0	27
Richmond	1	------	2	0	12	6	0	3	0	0	78
Roanoke	0	------	0	1	3	0	0	0	0	0	22
West Virginia:											
Charleston	1	------	0	0	6	2	0	1	0	0	26
Huntington	0	------	-------	0	-------	2	0	-------	0	0	--------
Wheeling	1	------	0	0	0	0	0	0	0	0	16
North Carolina:											
Gastonia	0	3	0	0	1	0	0	1	0	0	13
Raleigh	0	------	0	0	4	0	0	0	0	0	16
Wilmington	0	4	0	0	0	0	0	0	0	0	8
Winston-Salem	0	------	0	22	2	2	0	3	0	0	16
South Carolina:											
Charleston	0	395	1	0	12	0	0	3	0	1	32
Columbia	0	------	0	0	8	0	0	0	0	0	19
Florence	0	------	0	0	1	0	0	0	0	0	13
Greenville	0	------	0	26	1	0	0	1	0	0	10
Georgia:											
Atlanta	1	76	5	0	8	8	0	7	0	0	105
Brunswick	4	------	0	0	0	1	0	0	0	0	4
Savannah	0	67	4	0	3	1	0	1	0	2	30
Florida:											
Miami	0	------	0	0	4	1	0	5	1	3	45
Tampa	1	1	1	0	9	2	0	1	0	0	26
Kentucky:											
Ashland	1	------	0	0	1	0	0	1	0	0	2
Covington	1	------	0	0	5	4	0	1	0	0	25
Lexington	2	------	0	0	8	0	0	2	0	0	26
Louisville	2	12	1	1	10	3	0	3	0	10	63
Tennessee:											
Knoxville	1	------	4	11	5	1	0	2	0	0	33
Memphis	1	------	3	2	10	5	0	5	0	10	93
Nashville	0	------	5	0	13	3	0	2	0	0	63
Alabama:											
Birmingham	0	30	2	0	10	5	0	5	0	0	75
Mobile	0	3	1	0	2	2	0	0	0	0	32
Montgomery	1	4	-------	0	-------	0	0	-------	0	0	--------
Arkansas:											
Fort Smith	1	------	-------	0	-------	0	0	-------	0	0	--------
Little Rock	5	------	1	0	3	5	0	1	0	0	--------
Louisiana:											
Lake Charles	0	------	0	0	2	0	0	0	0	0	7
New Orleans	10	1	3	11	14	10	0	6	0	6	156
Shreveport	0	------	0	14	8	1	0	1	0	0	47

See footnotes at end of table.

City reports for week ended Feb. 8, 1936—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet-fever cases	Smallpox cases	Tuberculosis deaths	Typhoid-fever cases	Whooping-cough cases	Deaths, all causes
		Cases	Deaths								
Texas:											
Dallas	3	4	4	13	13	7	0	5	0	1	78
Fort Worth	2	------	1	0	6	5	0	3	0	0	51
Galveston	4	------	1	0	2	3	0	2	0	0	19
Houston	11	------	1	13	16	5	0	3	2	1	88
San Antonio	1	------	3	1	14	8	0	8	1	0	72
Montana:											
Billings	0	------	0	0	1	14	0	0	2	1	6
Great Falls	0	------	0	0	1	15	0	0	0	2	7
Helena	------	------	------	------	------	------	------	------	------	------	------
Missoula	0	------	0	0	0	2	0	0	0	0	3
Idaho: Boise	0	------	0	1	1	9	0	0	0	0	6
Colorado: Colorado Springs	0	------	0	3	3	9	1	1	0	1	15
Denver	2	------	1	6	12	21	0	6	0	7	90
Pueblo	0	------	1	0	2	20	0	0	0	0	13
New Mexico: Albuquerque	0	1	0	0	3	12	0	2	0	9	18
Utah: Salt Lake City	0	------	1	2	1	84	0	0	0	10	25
Nevada: Reno	------	------	------	------	------	------	------	------	------	------	------
Washington:											
Seattle	0	------	0	24	3	24	0	4	2	0	113
Spokane	0	------	0	4	1	7	0	1	0	4	29
Tacoma	0	------	0	4	6	5	0	0	0	0	40
Oregon:											
Portland	1	2	1	279	6	13	0	2	0	5	90
Salem	0	------	------	5	------	0	0	------	0	0	------
California:											
Los Angeles	7	49	2	206	25	90	0	20	1	27	357
Sacramento	4	7	2	12	3	13	0	2	0	12	29
San Francisco	1	28	7	294	22	85	0	10	0	9	208

State and city	Meningococcus meningitis		Poliomyelitis cases
	Cases	Deaths	
Massachusetts:			
Boston	1	1	0
Worcester	1	0	0
New York: New York	13	11	0
New Jersey: Newark	1	0	0
Pennsylvania: Pittsburgh	0	1	0
Ohio:			
Cleveland	1	1	0
Columbus	2	0	0
Toledo	0	1	0
Indiana: Indianapolis	0	1	0
Illinois: Chicago	8	1	0
Minnesota: Minneapolis	1	0	0
Iowa: Des Moines	1	0	0
Missouri:			
Kansas City	3	0	0
St. Joseph	2	0	0
St. Louis	3	2	2
Nebraska: Omaha	1	0	0
Kansas: Wichita	0	0	1
Delaware: Wilmington	0	1	0
Maryland: Baltimore	10	1	0
District of Columbia: Washington	4	2	1
South Carolina:			
Charleston	1	1	1
Greenville	0	1	0
Georgia: Atlanta	1	0	0
Tennessee:			
Knoxville	1	0	0
Memphis	4	2	0
Arkansas: Little Rock	1	0	0
Louisiana: Shreveport	1	2	0
Texas:			
Houston	3	0	0
San Antonio	1	1	0
Colorado: Colorado Springs	0	0	1
Washington: Seattle	1	1	0
Oregon: Portland	1	0	0
California: Los Angeles	1	1	2

Epidemic encephalitis.—Cases: Columbus, 1; Chicago, 1; Kansas City, Mo., 1.
Pelagra.—Cases: Charleston, S. C., 1; Tampa, 1; New Orleans, 1; Dallas, 1; Los Angeles, 1; San Francisco, 3.
Rabies in man.—Deaths: Greenville, S. C., 1.
Typhus fever.—Cases: Boston, 1; Worcester, 1; Flint, 1.

FOREIGN AND INSULAR

CEYLON

Mortality.—From November 1934 to October 1935 more than 100,000 deaths from malaria and allied causes occurred in Ceylon. During the same period a total of 214,224 deaths from all causes were reported, as compared with 113,640 deaths for the previous 12 months.

The following table shows the mortality figures by months since the malaria epidemic began in November 1934, as compared with the previous 12 months.

Deaths reported from all causes

	1934	1933		1934	1933
November	12,198	9,447	December	19,728	9,049
	1935	**1934**		**1935**	**1934**
January	36,252	11,541	July	16,236	9,476
February	26,552	9,964	August	14,309	9,967
March	19,065	9,105	September	10,895	8,540
April	15,931	8,786	October	10,913	9,910
May	16,693	9,116			
June	15,452	8,739	Total	214,224	113,640

ITALY

Communicable diseases—4 weeks ended December 8, 1935.—During the 4 weeks ended December 8, 1935, cases of certain communicable diseases were reported in Italy as follows:

Disease	Nov. 11–17		Nov. 18–24		Nov. 25–Dec. 1		Dec. 2–8	
	Cases	Communities affected	Cases	Communities affected	Cases	Communities affected	Cases	Communities affected
Anthrax	30	28	24	22	17	17	17	17
Cerebrospinal meningitis	7	7	6	6	9	8	5	5
Chicken pox	222	107	245	122	288	107	304	118
Diphtheria and croup	717	343	796	379	730	370	766	368
Dysentery	11	10	12	11	7	7	16	12
Hookworm disease	9	8	5	4	9	7	10	6
Lethargic encephalitis			1	1	1	1	1	1
Measles	1,189	197	1,317	207	1,210	209	1,139	220
Paratyphoid fever	120	76	78	53	91	68	73	58
Poliomyleitis	20	15	25	20	22	19	19	14
Puerperal fever	48	46	41	36	47	47	32	32
Rabies	1	1						
Scarlet fever	685	269	649	252	590	233	514	208
Typhoid fever	688	388	552	301	531	301	444	251
Undulant fever	21	18	23	17	14	14	21	19
Whooping cough	193	74	243	89	330	76	261	81

LATVIA

Notifiable diseases—October-December 1935.—During the months of October, November, and December, 1935, cases of certain notifiable diseases were reported in Latvia as follows:

Disease	October	November	December	Disease	October	November	December
Anthrax	1			Paratyphoid fever	25	37	11
Cerebrospinal meningitis	6	7	5	Poliomyelitis	8	3	3
Diphtheria	70	80	87	Puerperal septicemia	8	3	2
Erysipelas	23	22	35	Scarlet fever	176	260	241
Influenza	65	53	75	Tetanus	1	1	
Leprosy	2	1	1	Trachoma	26	42	72
Measles	8	69	74	Tuberculosis	308	333	294
Mumps	5	4	15	Typhoid fever	64	48	33
				Whooping cough	9	30	22

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Health, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following table must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		June 30–July 27, 1935	July 28–Aug. 31, 1935	Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Week ended— November 1935 2	9	16	23	30	December 1935 7	14	21	28	January 1936 4	11	18	25
China: Amoy	C	1																
India	C	25,494	57,713	51,707	29,882	6,397	4,496	5,553	4,302	4,890	3,355	4,620	1,619					
	D	13,286	29,945	24,303	15,039	3,239	2,246	2,980	2,258	2,627	1,850	2,401	839					
Assam	C	250	1,706	585	164	54	74	125	198	207	204	154	211	138	72	77	120	49
	D	146	871	286	79	29	30	62	123	112	103	104	109	80	46	39	62	20
Bombay Presidency	C	1,328	6,236	7,779	3,318	559	477		510	346	387	357	148	49	74	149		
	D	528	2,687	3,328	1,510	252	195		249	181	183	165	67	30	44	75		
Bombay	C	7	6	3				[1] 1										
Calcutta	C	522	216	119	90	22	19	40	33	30	24	29	38	12	15	28	57	40
Central Provinces and Berar	C	3,732	7,243	11,774	5,775	535	487	196	102	30	47	40	6	5	13	1		
Chittagong	C	8	7				1											
Cochin	D		1	11	9													
Madras Presidency	C	2,972	7,487	8,185	4,648	1,108	953	894	1,052	1,273		1,311	1,004	540	212	186		
	D	1,264	3,249	3,482	2,114	502	486	408	501	630		625	454	257	96	94		
Madras	C	84	137	31	8			1	7	4	3	5	4	1		2	3	4
	D	23	57	15	1				1	3	4	2	1				1	
Moulmein	C		1															
Negapatam	C												4	3	3	7	5	7
	D												2	2	2	4		2
Northwest Frontier Province	C		80	338	12												1	
	D		36	174	11													
Punjab	C	252	516	302	154	23	1							7		1		
Rangoon	C	3				[1] 1									[1] 1			
Vizagapatam	C		1															
India (French):																		
Chandernagor	C	7	16	1														
Karikal	C				4	1				11								
Pondichery	C	2	39	83	16	1				4								
Indochina (see also table below): Pnom-Penh	C		1		1													

[1] Imported.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place		June 30–July 27, 1935	July 28–Aug. 31, 1935	Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Week ended— November 1935 2	9	16	23	30	December 1935 7	14	21	28	January 1936 4	11	18	25
Philippine Islands:																		
Occidental Negros Province	C		1															
	D		1															
Rizal Province	C		1															
Siam:																		
Ang Thoang Province	C				10	1			1	1								
	D				9	1			1	1								
Ayudhaya Province	C			46	30	5	8	8	4			11	17	12	17	9	23	25
	D			31	25	4	7	4	1			6	19	10	11	6	16	16
Bangkok	C		1	43	44	10	13	18	18	18	16	5	14	14	17	21	39	47
Bejrpuri Province	C		13	14	14				3						1	9	20	26
Chhaxoengsao Province	C											3	25	27	14	60	57	44
Jalapuri Province	C													3	6	1	8	5
Kanchanapuri Province [1]	C	6	9															
Lobpuri Province	C												9	1				
Nagara Pathom Province	C				11	6	12	3	4		1				3	1		
Nondpuri Province	C			2	8			6	6	7	3				1		2	4
Prachinpuri Province	C									14	17	9	4	24	5	7	12	2
Pradumdhani Province	C				6	1			1		1					1		3
Rajpuri Province	C		72	107	18	6	8	2	11	9	16	10	16	12	24	29	10	
Sarapuri Province	C				6	13	2	1	1							2		
Singhapuri Province	C				11	10	1	4						2		1		
Smudprakar Province	C			5	5	2		3		1	8		20	21	5	1	6	3
Smudsagara Province	C		7	9	9	1	1	1		4	11	4	1	20	8	25	16	9
Smudsongram Province	C		51	56	23	2	11	11	7	3	6	7	12	13	16	12	8	13
Subarnpuri Province	C						12	1	3	2								
On vessels:																		
S. S. *Sunthia* at Rangoon from Calcutta	C	1																
S. S. *Kuala* at Penang from Moulmein	C	1																
S. S. *Cape St. Francis* at Rangoon from Calcutta	C	1																
S. S. *Cape St. Andrew* at Calcutta	C	1																

[1] During the period Apr. 20 to July 9, 1935, 98 cases of cholera with 95 deaths were reported in Kanchanapuri Province, Siam.

Place		August 1935			September 1935			October 1935			November 1935			December 1935		
		1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31
Indochina (French) (see also table above):																
Cambodia[3]	C								1				1			
	D								1							
Cochin-China[3]	C			3		1			1			1	1		2	1
	D			2		1			1			1			2	1

[3] Reports incomplete.

PLAGUE[1]

[C indicates cases; D, deaths; P, present]

Place		June 30-July 27, 1935	July 28-Aug. 31, 1935	Sept. 1-28, 1935	Sept. 29-Oct. 26, 1935	Week ended— November 1935					December 1935				January 1936			
						2	9	16	23	30	7	14	21	28	4	11	18	25
Algeria: Philippeville	C				3													
Argentina (see also table below):																		
Pampa Territory—Leventue.[2]																		
San Luis.[3]																		
Azores. (See table below.)																		
Belgian Congo	C	3	2	2	1													
Plague-infected rats					3													
Bolivia. (See table below.)																		
Brazil.[4]																		
British East Africa:																		
Kenya	C	21	26	33	10	2	2	1	1	1	3	19	1	2	4	1		
Tanganyika	C																	7
Uganda	C	240	231	188	206	49	50	56	69	57	25	21		15	6	7	19	
	D	215	226		188	46	40	35	59	51	20	19		15	5	6	18	

[1] Including plague in the United States and its possessions.
[2] A report dated Aug. 8, 1935, states that 4 cases of plague occurred at Leventue, Pampa Territory, Argentina, during 2 months.
[3] A report dated Aug. 2, 1935, stated that plague-infected rats were present at San Luis, Argentina.
[4] Reports of plague in Brazil have been received under the dates indicated, as follows: July 25, 1935, 4 cases at Vicosa, Alagoas State; July 2, about 16 deaths in Fiera Santanna, Bahia State, since Jan. 1; Oct. 12, 7 cases near Bomfim, Bahia State, during September; during October 1935, 3 cases at Tanguinho, Santa Barbara, Bahia State; July 26, 10 cases in Ceara State since Jan. 1; Sept. 10, 204 cases with 72 deaths in Pernambuco State up to Aug. 24; Oct. 8, 4 cases and 1 death at Paulista, Piauhy State; Nov. 1-30, 7 cases near Feira, Bahia State; Dec. 1-31, 20 cases near January Catuny, Bahia State.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		June 30–July 27, 1935	July 28–Aug. 31, 1935	Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Week ended— November 1935 2	9	16	23	30	December 1935 7	14	21	28	January 1936 4	11	18	25
Ceylon:																		
Balapitiya	C								1									
Colombo	C	5	4	11	6			2	1	2	2	4	3	2	3	2	2	3
	D	5	4	8	6			1	1	2	2	4	2	2	3	2	2	2
Plague-infected rats		3			14	6	17		2	2		1	3					
Ratnapura	C				1													
Tellijjawilla	C				1													
China (see also table below):																		
Fukiang Province—Chuanchow.[6]																		
Manchuria.[6]																		
Dutch East Indies: West Java	C	591	670	868	769	215												
	D	588	668	866	769	214												
Ecuador:																		
Duran	C				1													
Guayaquil	C		3	8	35	7	9	5	17	10	13	2	5			3	4	1
	D			3	15	1	2	3	5	5	1		2	1		1	3	2
Plague-infected rats					8	1	2		4	5			4	1	1	1		
Loja Province—Celica	C	1																
Nobol	C				1													
Egypt:																		
Alexandria—Plague-infected rats		P	P	P	P		P		P		P			P		P		
Asyut Province	C	2	1					1				1	2		1	2	2	1
Girga Province	C																1	
Qena Province	C				1													
Great Britain—England—Liverpool—Plague-infected rats											2							
Hawaii Territory: Plague-infected rats:																		
Hawaii Island—Hamakua district—																		
Hamakua Mill										1				1				
Kalopa		3	1															
Kukaiau					1	2					1							
Paauhau				1	2										1			
Paauilo		1																
Pohakea Sector.[7]																		
Maui Island—Makawao district—Kahului (9–10 miles from)			2	1														

India	C	176	947	1,433	2,635	451	655	653	649	723	481	514	419					
	D	111	483	633	1,228	181	184	201	204	249	196	249	214					
Bassein	C	4	1	3	1							1						
Plague-infected rats		3	1							1								
Bombay Presidency	C	68	162	163	363	33	71		30	14	34		37	17	15	32		
	D	36	79	94	234	22	46		20	5	12		22	14	8	22		
Bombay	C																	[8] 1
Central Provinces and Berar	C	6	255	483	464	229	351	323	366	382	208	272	119	117	55	137		2
Madras Presidency	C	9	49	111	121	19	25	27	37	25		28	43			7		
	D	2	21	46	73	19	16	14	22	17		21	30			4		
Punjab	C						11	9	12	16								
	D						5	3	3	10								
Rangoon	C	8	6	1	1						[8] 1							
Plague-infected rats		2	1	1	1						1							
Indochina (see also table below):																		
Pnom-Penh	C																	1
Saigon-Cholon	C		2															1
Iraq: Baghdad	C	2	3	1				1				1			[8] 1			
Libya: Province of Tripoli—Tagiura	C	1																
Madagascar. (See table below.)																		
Morocco:																		
Dra boundaries—Tighmert	C	7																
Mogador	C	9																
	D	3																
Peru. (See table below.)																		
Senegal. (See table below.)																		
South-West Africa. (See table below.)																		
Tunisia: Tunis	C	2	2	10	2				1									
	D	1		2					1									
Plague-infected rats			1						1									
Union of South Africa	C	7	4	8	18		[8] 2		[8] 5		[8] 2		[8] 5		[8] 24		[8] 20	
Cape Province	C										1	1						
Orange Free State	C									1	1							
United States:																		
California—Plague-infected ground squirrels:																		
Lassen County		1																
Montana—Dillon—Plague-infected ground squirrels		1																
Oregon—Plague-infected ground squirrels:																		
Grant County		7																
Wallowa County		[10] 8																
On vessel: S. S. *Ipanema* at Marseille	C				[11] 2													

[8] A report dated July 4, 1935, states that 76 cases of plague with 58 deaths were reported at Chuanchow, Province of Fukiang, China. Plague was also present at Lungyen.
[8] A report dated Oct. 28, 1935, states that up to Oct. 23, 155 deaths from plague were reported in the provinces of Kirin, Lungkiang, Fengtien, and South Hsingan, Manchuria China. A report dated Nov. 27, 1935, stated that 23 deaths from plague had occurred in the vicinity of Koshan, and that there were about 15 cases in Harbin.
[7] During the week ended Feb. 15, 1936, 1 plague-infected rat was reported at Pohakea Sector, Hamakua District, Island of Hawaii, Hawaii Territory.
[8] Imported.
[9] For 2 weeks.
[10] Includes 1 suspected plague-infected squirrel.
[11] One of these cases was a member of the crew and the other was a stevedore believed to have worked on the vessel. Several plague-infected rats were reported found on board the vessel.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		June 30–July 27, 1935	July 28–Aug. 31, 1935	Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Week ended— November 1935 2	9	16	23	30	December 1935 7	14	21	28	January 1936 4	11	18	25
Ceylon:																		
Balapitiya	C								1									
Colombo	C	5	4	11	6			2	1	2	2	4	3	2	3	2	2	3
	D	5	4	8	6			1	1	2	2	4	2	2	3	2	2	2
Plague-infected rats		3			14	6	17		2	2		1	3					
Ratnapura	C				1													
Tellijjawilla	C				1													
China (see also table below):																		
Fukiang Province—Chuanchow.[4]																		
Manchuria.[6]																		
Dutch East Indies: West Java	C	591	670	868	769	215												
	D	588	668	866	769	214												
Ecuador:																		
Duran	C				1													
Guayaquil	C		2	8	35	7	9	5	17	10	13	2	5			3	4	1
	D			3	15	1	2	3	5	5	1		2	1		1	3	2
Plague-infected rats					8	1	2		4	5			4	1	1	1		
Loja Province—Celica	C	1																
Nobol	C				1													
Egypt:																		
Alexandria—Plague-infected rats		P	P	P	P		P		P		P			P		P		
Asyut Province	C	2	1					1				1	2		1	2	2	1
Girga Province	C																1	
Qena Province	C				1													
Great Britain—England—Liverpool—Plague-infected rats											2							
Hawaii Territory: Plague-infected rats:																		
Hawaii Island—Hamakua district—																		
Hamakua Mill										1				1				
Kalopa		3	1															
Kukaiau					1	2					1							
Paauhau				1	2										1			
Paauilo		1																
Pohakea Sector.[7]																		
Maui Island—Makawao district—Kahului (9–10 miles from)			2	1														

India	C	176	947	1,433	2,635	451	655	653	649	723	481	514	419					
	D	111	483	633	1,228	181	184	201	204	249	196	249	214					
Bassein	C	4	1	3	1							1						
Plague-infected rats		3	1							1								
Bombay Presidency	C	68	162	163	363	33	71		30	14	34		37	17	15	32		
	D	36	79	94	234	22	46		20	5	12		22	14	8	22		
Bombay	C																	[8] 1
Central Provinces and Berar	C	6	255	483	464	229	351	323	366	382	208	272	119	117	55	137		2
Madras Presidency	C	9	49	111	121	19	25	27	37	25		28	43			7		
	D	2	21	46	73	19	16	14	22	17		21	30			4		
Punjab	C						11	9	12	16								
	D						5	3	3	10								
Rangoon	C	8	6	1	1						[8] 1							
Plague-infected rats		2	1	1	1						1							
Indochina (see also table below):																		
Pnom-Penh	C																	1
Saigon-Cholon	C		2															1
Iraq: Baghdad	C	2	3	1				1				1			[8] 1			
Libya: Province of Tripoli—Tagiura	C	1																
Madagascar. (See table below.)																		
Morocco:																		
Draa boundaries—Tighmert	C	7																
Mogador	C	9																
	D	3																
Peru. (See table below.)																		
Senegal. (See table below.)																		
South-West Africa. (See table below.)																		
Tunisia: **Tunis**	C	2	2	10	2				1									
	D	1		2					1									
Plague-infected rats			1						1									
Union of South Africa	C	7	4	8	18		[8] 2		[8] 5		[8] 2		[8] 5		[8] 24		[8] 20	
Cape Province	C										1	1						
Orange Free State	C									1	1							
United States:																		
California—Plague-infected ground squirrels:																		
Lassen County		1																
Montana—Dillon—Plague-infected ground squirrels		1																
Oregon—Plague-infected ground squirrels:																		
Grant County		7																
Wallowa County		[10] 8																
On vessel: S. S. *Ipanema* at Marseille	C				[11] 2													

[8] A report dated July 4, 1935, states that 76 cases of plague with 58 deaths were reported at Chuanchow, Province of Fukiang, China. Plague was also present at Lungyen.

[9] A report dated Oct. 28, 1935, states that up to Oct. 23, 155 deaths from plague were reported in the provinces of Kirin, Lungkiang, Fengtien, and South Hsingan, Manchuria China. A report dated Nov. 27, 1935, stated that 23 deaths from plague had occurred in the vicinity of Koshan, and that there were about 15 cases in Harbin.

[7] During the week ended Feb. 15, 1936, 1 plague-infected rat was reported at Pohakea Sector, Hamakua District, Island of Hawaii, Hawaii Territory.

[8] Imported.

[9] For 2 weeks.

[10] Includes 1 suspected plague-infected squirrel.

[11] One of these cases was a member of the crew and the other was a stevedore believed to have worked on the vessel. Several plague-infected rats were reported found on board the vessel.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		July 1935	August 1935	September 1935	October 1935	November 1935	December 1935
Argentina (see also table above):							
Cordoba Province	C						5
Jujuy Province	C	1					
Azores	C		3	4	2	2	
Basutoland	C						16
Belgian Congo	C	3					
Bolivia	C		[12] 4				
Indochina (see also table above):							
Cambodia	C			1			
Cochinchina	C		1			1	
Madagascar (central region)	C	112	138	232	293	345	
	D	102	133	227	282	333	
Peru	C	4	10	3	1	14	9
Catamarca Department	C					13	
Lambayeque Department	C						1
Peru—Continued.							
Libertad Department	C	2		1	1	1	
Lima Department	C	2	5	2		10	7
Callao	C		3				
	D		2				
Lima	C	1	5				
	D		2				
Senegal:							
Baol [13]	C		16	8			
Dakar [13]	C	25	2				
	D	15	1				
Rufisque [13]	C	2	4				
Theis [13]	C	17	22				
Tivaouane [13]	C	42	46	11	1	1	1
South-West Africa: Ovamboland [14]	C	[12] 24					

[12] Suspected. [13] Incomplete reports. [14] From the beginning of 1935 up to Sept. 30, 185 cases of plague were reported in Ovamboland, South-West Africa. [15] For 2 months.

SMALLPOX

[C indicates cases; D, deaths; P, present]

Place		June 30–July 27, 1935	July 28–Aug. 31, 1935	Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Week ended—											
						November 1935					December 1935				January 1936			
						2	9	16	23	30	7	14	21	28	4	11	18	25
Algeria: Algiers Department	C	1		5														
Argentina.[1]																		
Belgian Congo. (See table below.)																		
Bolivia. (See table below.)																		
Brazil:																		
Porto Alegre (alastrim)	C	29	44															
Santos	C			2														

British East Africa:																			
Kenya	C	2	7																
Tanganyika	C	96	59	36	6	9		8		1									
Uganda	C																	8	
British Guiana.[2]																			
British Somaliland	C	16	3	25	4	1	1	1			2	1		4	2	1	1		
British South Africa:																			
Northern Rhodesia	C			1															
Southern Rhodesia	C				1														
Canada:																			
Alberta	C		[3] 1							[3] 1						[3] 1			
British Columbia	C		[3] 1	5	[3] 1	[3] 1						1		1			1	1	
Manitoba	C	[3] 1																	
Ontario	C	3																	
Quebec	C	2																	
Saskatchewan	C				[3] 3			[3] 1											
Canary Islands: **Santa Cruz de Tenerife**	C		1																
Chile: Chuquicamata	C	[4] 1	1																
China:																			
Amoy	C	2	1																
Dairen	C	8	2																
Foochow	C	P	P	P	P	P		P		P		P							
Hangchow	C	1												1					
Hong Kong	C							1	1										
Nanking	C	3				3		9	6	8	19	5	5	14	1				
Shanghai	C	2	5	1	2	1		1		2	1	2		3	1	1	2		
Swatow	C			1		1		2			1								
Tientsin	C		1								1	1		1					
Tsingtao	C		1																
Chosen. (See table below.)																			
Colombia	C		3	111			[4] 25	1		18		14	15	3	7	11			
Bogota	C		10				[3] 1			7	3								
Dahomey. (See table below.)																			
Eritrea	C		5	14	7														
Asmara	C				4														
France. (See table below.)																			
Greece: **Salonika**	C		8	6				2	2							2			
Guatemala. (See table below.)																			
Honduras: Tela	C	P			2														
India	C	13,440	10,576	5,530	4,147	1,207	1,337	1,731	1,970	2,397	2,038	2,946	2,235						
	D	3,320	2,735	1,256	865	225	265	346	418	508	450	616	422						
Assam	C	6	100	19	10	2		2	3	10	43	26	47	52	38	18	23	37	
Bassein	C															[4] 1			
Bombay Presidency	C	2,273	1,678	748	487	117	178		152	188	183		363	195	279	542			
	D	471	363	133	65	9	18		32	31	32		38	33	67	79			
Bombay	C	402	54	24	11	2	6	2	5	6	8	6	6	10	13	22	18	33	
	D	69	33	15	4	1	3	2	1	5	7	2	5	7	8	15	9	17	

[1] A report dated Oct. 25, 1935, states that 19 cases of smallpox have been reported in Entre Rios Province, Argentina.
[2] A report dated July 6, 1935, states that 57 cases of smallpox with 1 death were reported in British Guiana.
[3] For 2 weeks.
[4] Imported.
[5] For 6 weeks.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		June 30–July 27, 1935	July 28–Aug. 31, 1935	Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Week ended— November 1935 2	9	16	23	30	December 1935 7	14	21	28	January 1936 4	11	18	25
India—Continued.																		
Calcutta	C	56	53	24	13	2	2	4	2	9	7	13	27	41	49	105	------	116
	D	40	27	15	5	2	2	2	1	5	3	9	14	30	29	45	------	59
Central Provinces and Berar	C	651	340	114	380	36	51	54	167	167	185	273	214	136	125	386	340	415
Chittagong	D	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1	------
Cochin	C	------	------	------	5	1	------	------	------	------	------	------	------	------	------	------	------	------
Karachi	C	7	7	1	2	------	1	1	1	------	------	1	9	1	------	7	9	1
Madras Presidency	C	2,615	3,465	2,246	1,664	394	358	325	371	363	------	440	527	72	20	76	------	------
	D	402	573	401	339	66	62	61	69	66	------	76	93	32	4	6	------	------
Madras	C	10	10	10	1	3	------	1	------	3	3	------	2	------	1	2	------	------
Moulmein	C	6	18	5	------	1	------	------	1	------	2	------	------	4	1	------	6	20
Negapatam	C	6	17	3	2	------	------	------	------	------	------	------	------	------	2	------	------	1
Northwest Frontier Province	C	9	6	2	------	------	------	9	------	------	2	3	1	1	4	11	------	11
Punjab	C	168	72	79	99	40	41	46	107	102	73	96	82	62	148	83	118	149
Rangoon	C	16	8	2	1	------	‘1	------	------	------	‘1	‘1	2	------	------	‘2	1	‘6
Tuticorin	C	19	25	12	11	3	------	------	------	------	------	------	5	------	------	------	------	------
Vizagapatam	C	14	14	14	18	1	------	1	2	2	------	1	5	3	4	10	15	7
India (French):																		
Chandernagor	C	3	4	5	4	------	------	------	------	44	------	------	------	------	------	------	------	------
Karikal	C	21	44	12	25	------	------	------	------	1	------	------	------	------	------	------	------	------
Pondichery	C	50	51	22	11	------	------	------	------	3	------	------	------	------	------	------	------	------
	D	41	39	24	8	------	------	------	------	3	------	------	------	------	------	------	------	------
Indochina (see also table below): Haiphong	C	2	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Iran	C	------	2	3	19	------	1	2	------	------	3	------	5	4	8	------	------	------
Teheran	C	1	------	2	3	------	------	------	------	------	------	------	------	------	------	------	------	------
	D	------	------	1	1	------	------	------	------	------	------	------	------	------	------	------	------	------
Iraq	C	------	9	------	11	------	------	------	7	1	9	17	4	6	7	20	28	3
Arbil	C	------	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Baghdad	C	------	------	------	------	1	------	------	1	------	------	------	------	------	------	1	------	------
Basra	C	------	------	------	1	------	------	1	------	------	------	------	------	------	------	------	------	------
Italian Somaliland	C	------	------	------	------	------	------	------	------	2	------	------	------	------	------	------	------	------
Japan:																		
Kawasaki	C	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Mizuna Migifu Prefecture.[6]																		

Libya: Tripolitania	C														2			
Lithuania	C	1																
Mexico (see also table below):																		
Chihuahua	C							[7] 1										1
Guadalajara	D	2	1	2	1	1	3	2	2	1	3	1	4	8	4	5	4	
Mazatlan	C									1								
Mexico, D. F.	C	32	51	19	3	2	5	3		2	2	1	2					
Monterey	C				1			1										
San Luis Potosi	D	2	2	4														
Torreon	C					1			3	1	1				1			
Morocco. (See table below.)																		
Mozambique. (See table below.)																		
Nigeria	C	472	124	290	289		[5] 17		[5] 129		[5] 74		[5] 353					
Niger Territory. (See table below.)																		
Nyasaland. (See table below.)																		
Oman	C														750			
Peru. (See table below.)																		
Poland	C	1	1							1								
Portugal (see also table below):																		
Lisbon	C	1	2	2	3	1		2	2		5		1	2	1	2		
Oporto	C	2																
Salvador. (See table below.)																		
Saudi Arabia	C	7	1			2	2											
Siam: Bangkok	C	6																
Sierra Leone	C	47	344	288	110		[5] 176		[5] 46		[5] 38		[5] 78					
Freetown	C	6	3	2	7						2							
Spain	C	38	13	12	7	1				[8]				1	3	9	7	1
Straits Settlements: Singapore	C	16	12	1														
Sudan (Anglo-Egyptian)	C	2	7						2						3			
Syria: Tripoli	C				1													
Turkey. (See table below.)																		

On vessels:

S. S. *Chitose Maru* at Nagasaki from Dairen ..... 2 cases ..... July 2, 1935
S. S. *Perala* at Aden from Massawa ..... 1 case ..... July 13, 1935
S. S. *Englistan* at Rangoon from Gopalpore ..... 1 case ..... July 30, 1935
S. S. *Hong Kheng* at Singapore from Amoy ..... 2 cases ..... Aug. 1, 1935
S. S. *Barenfels* at Gibralter ..... 1 case ..... Aug. 23, 1935
S. S. *Talamba* at Rangoon from Madras ..... 1 case ..... Sept. 9, 1935

On vessels—Continued.

S. S. *Ethiopia* at Rangoon from Madras ..... 1 case ..... Oct. 4, 1935
S. S. *Ekma* at Rangoon from Calcutta ..... 1 case ..... Dec. 10, 1935
S. S. *Cape St. Francis* at Rangoon from Calcutta ..... 1 case ..... Dec. 17, 1935
S. S. *Bankura* at Karachi ..... 1 case ..... Jan. 4, 1936
S. S. *Matua* at Suez from Calcutta ..... 1 case ..... Jan. 21, 1936

[5] For 2 weeks.
[6] Imported.
[7] A report dated June 11, 1935, stated that 10 deaths from smallpox had occurred in Mizuna Migifu Prefecture, Japan.
[8] For 3 weeks.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths: P, present]

Place		July 1935	August 1935	September 1935	October 1935	November 1935	December 1935
Belgian Congo	C	197	261	303	248	-------	54
Bolivia	C	47	30	57	23	-------	-------
China: Manchuria—Harbin	C	-------	-------	-------	1	-------	-------
Chosen	C	47	32	16	53	53	-------
Dahomey	C	7	2	3	-------	31	-------
France	C	60	1	6	16	7	18
Guatemala	C	-------	-------	4	-------	1	-------
Indochina (see also table above)	C	203	138	103	98	66	44
	D	31	30	16	12	10	3
Mexico (see also table above):							
Aguascalientes State:							
Aguascalientes	C	3	-------	-------	-------	-------	-------
Campeche State	C	1	-------	-------	-------	-------	-------
Guanajuato State	C	4	2	-------	-------	-------	-------
Leon	C	2	2	-------	-------	-------	-------
Jalisco State	C	10	1	-------	-------	-------	-------
Guadalajara	C	2	1	-------	-------	-------	-------
Lower California	C	3	-------	-------	-------	-------	-------
Mexico State	C	1	-------	-------	-------	-------	-------

Place		July 1935	August 1935	September 1935	October 1935	November 1935	December 1935
Mexico (see also table above)—Cont.							
Mexico, D. F	C	54	35	-------	-------	-------	-------
Mexico City	C	41	31	2	-------	-------	-------
Oaxaca State	C	-------	23	-------	-------	-------	-------
Puebla State:							
Puebla	C	2	1	-------	-------	-------	-------
San Luis Potosí State	C	5	5	-------	-------	-------	-------
San Luis Potosi	C	3	5	-------	-------	-------	-------
Vera Cruz State	C	-------	3	-------	-------	-------	-------
Vera Cruz	C	-------	1	-------	-------	-------	-------
Morocco	C	5	-------	1	-------	-------	-------
Mozambique	C	-------	2	37	15	1	-------
Niger Territory	C	174	209	111	127	-------	-------
Nyasaland	C	35	11	14	24	-------	-------
Peru	C	10	154	141	-------	-------	-------
Portugal (see also table above)	C	38	-------	52	154	-------	-------
	D	2	-------	9	34	-------	-------
Salvador	C	35	2	-------	-------	36	12
Turkey	C	9	-------	-------	1	-------	-------

TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place		June 30–July 27, 1935	July 28–Aug. 31, 1935	Sept. 1–28, 1935	Week ended— October 1935 5	12	19	26	November 1935 2	9	16	23	30	December 1935 7	14	21	28	January 1936 4	11	18
Algeria:																				
Algiers Department	C	18	1	1			1			1										1
Algiers	C																	1		
Constantine Department	C	36	3	4	1	3	1			1								3	18	
Bone	C			2															1	
Constantine	C			1		1												2	1	
Philippeville	C	2																		
Oran Department	C	17																		
Australia:																				
Queensland	C	2	1																	
Sydney	C											1	1							
Basutoland	C	11																		
Belgian Congo	C					1														
Bolivia. (See table below.)																				
Bulgaria	C			1																
Chile	C	282	397	285				[1] 473			[2] 460									
Concepcion	C	16	52	32				[1] 21												
Santiago [3]	C	111	245	172				[1] 333												
Valparaiso	C	1	8	24	3		10	13	25	2	17		12	6	15	10	6	3	2	
China:																				
Canton	C										2									
Hankow	C	2	1	1	1	1	1				1									
Harbin. [4]																				
Hong Kong	C			1																
Nanking	C								1											
Shanghai	C	2	1												1	1	1			
South Manchuria Railway Zone	C			2								4								
Tientsin	C									1										
Tsingtao	C	1	6	7												3				
Chosen. (See table below.)																				
Czechoslovakia. (See table below.)																				

[1] For 4 weeks.
[2] For 2 weeks.
[3] A report dated Jan. 20, 1936, states that there were 305 cases of typhus fever with 58 deaths in Santiago Province, Chile, from Nov. 2–16, 1935.
[4] A report dated June 25, 1935, states that about 400 cases of typus fever occurred at Harbin, Manchuria, China.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place		June 30–July 27, 1935	July 28–Aug. 31, 1935	Sept. 1–28, 1935	Week ended—															
					October 1935				November 1935					December 1935				January 1936		
					5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18
Egypt:																				
Alexandria	C	4												1					1	
Asyut Province	C	3	4					1			1									
Beheira Province	C	19	9	2	7	2		1			5	6		8		4			22	
Beni-Suef Province	C	1	1																	
Cairo	C	1	1	1																
Dakahliya Province	C	2	1																	
Damietta	C			1																
Faiyum Province	C										1									
Gharbiya Province	C	36	16	2							1								6	
Girga Province	C		1									1								
Minufiya Province	C	20	1	1																
Minya Province	C	2	3																	
Port Said	C	2	2	1																
Qena Province	C										1									
Sharkiya Province	C	4	1																	
Suez	C											1								
Provinces	C	98	41	18	7	3	1	3	1	1	10	8	6	13	9	4	15	49	35	
France. (See table below.)																				
Greece: Salonika (see also table below)	C												1	1	1	1	1	1		
Guatemala. (See table below.)																				
Hawaii Territory—Honolulu	C	1	1			2		4					1	1						
Hungary	C																		3	
Iran	C	29	29	21		2	2	1		2		3	2		1	1		2		
Teheran	C	14	1	3			2											1		
Iraq	C														17				19	
Baghdad	C		1																	
Basra liwa	C			1																
Irish Free State: Waterford County: Youghal District No. 2	C											1								
Japan: Tokyo	C	1																		
Latvia. (See table below.)																				
Lithuania	C	12	6	3							1		[1]18					12		[1]57

Place																				
Mexico (see also table below):																				
Guadalajara	D	1																		
Mexico, D. F	C	94	142	134		30	20		23	15	8	7	7	16	24	28				
Torreon	D			2																
Morocco (see also table below)	C	62	19	3			1		7				1	1	8		3	2	2	2
Palestine: Haifa	C	3	[1]7	[1]11	1	3	1	3	4	4	1	1	1					2		
Panama Canal Zone. (See table below.)																				
Paraguay: Asuncion	D	1																		
Peru. (See table below.)																				
Poland	C	175	130	56	29	30	28	22	23	23	24	34	55	59	63	73	35	55	96	100
	D	10	10	2	2		1	1	2		2	2	2	5	6	6	5	6	6	6
Portugal. (See table below.)																				
Rumania. (See table below.)																				
Straits Settlements: Singapore	C		2	1		1				1				1			1	1		
Trans-Jordan	C		1	2	1	1														3
Tunisia:																				
Tunis	C	1	1	4	1			1	1					1						3
Provinces	C	88	56	18	1		1	11	2	1	1		2	4		20	7	12	34	10
Turkey. (See table below.)																				
Union of South Africa. (See table below.)																				
Yugoslavia. (See table below.)																				
On vessel: S. S. *Agamemnon* at London	C			1																

Place		July 1935	August 1935	September 1935	October 1935	November 1935	December 1935
Bolivia	C	114	150	140	88		
China: Manchuria—Harbin	C				1	3	
Chosen	C	40	31	17	20	30	
Czechoslovakia	C	33	3	1	12		
France	C		1				
Greece	C	5	1	4	6	4	
Guatemala	C	22	24	43	18	26	7
Latvia	C	1					
Mexico (see also table above):							
Coahuila State	C		1				
Durango State	C	1					
Guanajuato State	C	9	7				
Leon	C	5	6				
Hidalgo State	C	6					
Jalisco State	C		8				
Guadalajara	C	1	1				
Mexico State	C	2	15				
Mexico, D. F	C	178	159				
Mexico City	C	170	155				
Nayarit State	D		6				
Oaxaca State	C	5	6				

Place		July 1935	August 1935	September 1935	October 1935	November 1935	December 1935
Mexico (see also table above)—Con.							
Puebla State	C	7					
Puebla	C	5	9				
Queretaro State	C		5				
San Luis Potosi State	D	11	3				
San Luis Potosi	C	1	1				
Sonora State	C		4				
Vera Cruz State	C		7				
Vera Cruz	C		2				
Morocco	C	65	12	3	8		13
Panama Canal Zone	C	1			5		
Peru	C	16	3	41	16		
Portugal	C	4		3	2		
Rumania	C	59	36	26	37	92	
Turkey	C	42	34	10	13	18	35
Union of South Africa:							
Cape Province	C	79	97	55	66	79	
Natal	C	2	4			6	
Orange Free State	C	37	37	10	23	18	
Transvaal	C	3	6	2	2	25	
Yugoslavia	C	49	31	11	6	10	

[1] For 2 weeks.

[1] Includes imported cases.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place		June 30–July 27, 1935	July 28–Aug. 31, 1935	Sept. 1–28, 1935	Week ended— October 1935 5	12	19	26	November 1935 2	9	16	23	30	December 1935 7	14	21	28	Jan. 4, 1936
Bolivia: Santa Cruz Department—Chuchio: [1]																		
Brazil: [2]																		
Bahia State	C																1	2
Matto Grosso State [2]	C	9															1	
Minas Geraes State [2]	C	6	9													2	8	3
	D															2	3	
Para State	C					1												
Sao Paulo State [2]	C		1													2	2	1
Colombia:																		
Intendencia of Meta	C		1	1														
Acacias	C		1							2								
Restrepo	C	1								2								
Dahomey: Porto Novo	C	1																
Gold Coast:																		
Bawku	C					3												
Cape Coast	C		1															
Tamale	C			1														
Ivory Coast:																		
Abidjan	C											1				1		
Indenie Circle	C																1	
Sassandra	C									1								
Senegal:																		
Dakar	C															[3] 1		
Kolda.[4]																		
M'Bake	C															1		
Sudan (French): Koutiala	C							1				1						

[1] During the month of June 1935, 1 case of yellow fever was reported at Chuchio, Bolivia.

[2] Yellow fever has also been reported in Brazil as follows: Matto Grosso State, week ended Jan. 18, 1936, 1 case, 1 death; week ended Feb. 1, 1936, 1 case, 1 death; Minas Geraes State, week ended Jan. 11, 1936, 1 case, 1 death; week ended Jan. 18, 1936, 4 cases, 4 deaths; week ended Feb. 1, 1936, 1 case, 1 death; Sao Paulo State, week ended Jan. 18, 1936, 3 cases, 3 deaths.

[3] Suspected.

[4] During the week ended Feb. 1, 1936, 1 case of yellow fever was reported at Kolda, Senegal.